

Applicable Standards

29 CFR 1910.212

General requirements for all machines

29 CFR 1910.213

Woodworking machinery requirements

29 CFR 1910.219

Mechanical power transmission apparatus

29 CFR 1910.147

The control of hazardous energy (lockout/tagout)

Sources of Additional Information

OSHA publication 3067

*Concepts and Techniques
of Machine Safeguarding*
([www.osha-slc.gov/
Publications/Mach_SafeGuard/](http://www.osha-slc.gov/Publications/Mach_SafeGuard/))

OSHA Technical Links

Machine Guarding
([www.osha-slc.gov/SLTC/
machineguarding/index.html](http://www.osha-slc.gov/SLTC/machineguarding/index.html))

OSHA Lockout/Tagout Interactive Training Program

([www.osha-slc.gov/dts/osta/
lototraining/index.htm](http://www.osha-slc.gov/dts/osta/lototraining/index.htm))

OSHA Publication 3157

*A Guide for Protecting Workers
from Woodworking Hazards*



AREA OFFICES

Chattanooga (423) 634-6424

Jackson (731) 423-5640

Kingsport (423) 224-2042

Knoxville (865) 594-6180

Memphis (901) 543-7259

Nashville (615) 741-2793

(800) 249-8510

Consultative Services (800) 325-9901

***Individuals with hearing
impairments please call our
TDD Line (615) 532-2879***

Visit our Web site at
www.tennessee.gov/labor-wfd

The Tennessee Department of Labor and Workforce Development is an equal opportunity employer. Auxiliary aids and services are available upon request to individuals with disabilities



Tennessee Department of Labor and Workforce Development, Authorization #337361, 3,000 copies, April 2006. This public document was promulgated at a cost of \$0.33 per copy.

Amputations



Special Emphasis Program



Amputations

The operation of saws, shears, slicers, and power presses can be extremely dangerous; injuries that result from inadequate guarding on these types of machines often result in permanent disability or death. It has been reported that workers who operate and maintain machinery suffer approximately 18,000 amputations and more than 800 deaths per year.



Approximately one-half of all amputations occur in the manufacturing sector

As a result, Tennessee OSHA has implemented a Special Emphasis Program on Amputations to reduce workplace machine hazards that are causing or are likely to cause amputations. This program targets all types of power presses (including press brakes), as well as saws, shears, and slicers because these machines account for a significant number of amputation injuries in general industry.

PREVENTING

Amputations in the Workplace

In virtually every workplace there are places where workers can reach into machinery and suffer amputation while attempting to align, adjust, inspect, un-jam, retrieve fallen parts, lubricate, etc. A National Institute for Occupational Safety and Health (NIOSH) study found that 20 to 50% of all machines in use are unguarded or poorly guarded at the point of operation. Data from the Bureau of Labor Statistics (BLS) indicate that about 10 percent of all reported amputations occur among power press operators. Recent OCHS statistics indicate approximately 49% of the injuries on mechanical power presses result in an amputation. Approximately 62% of the power press injuries are from foot-controlled power presses and approximately 30% from hand-activated presses.

Safeguards are essential for protecting workers from needless and preventable injuries. Existing safeguarding, however, may not provide the desired protection. They may not be adjusted properly, or different parts of the machine may need different guards, or the guard may be overridden or removed for convenience. A dual palm button may be too close to the point of operation.

Basic Types of Hazardous Mechanical Motions and Actions

Motions	Actions
rotating	cutting
reciprocating	punching
transverse	shearing
	bending

Suggestions for Employers

Any machine part, function or process that may cause amputation or other injury must be safeguarded. Where the operation of a machine or accidental contact with it can cause amputation/injury to the operator or others in the vicinity, the hazard must be either controlled or eliminated. Remember also, new equipment does not necessarily have the guards on the machine required by TOSHA. If not properly guarded, it is the employer's responsibility to add the necessary guarding to protect the employee.

Basic Areas Requiring Safeguarding

The Point of Operation - The point where work is performed on the materials, such as pressing, cutting, shaping, boring, or forming of stock.

Power Transmission Apparatus - All components of the mechanical system that transmit energy to the part of the machine performing the work. These components include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.

Other Moving Parts - All parts of the machine that move while the machine is working. These can include reciprocating, rotating, and transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine.

Remember the AUTO Principle

If you can reach **A**round
Under
Through
Over



an existing guard - it's not effective!

A guard must prevent a worker's hands or any part of the body from going around, under, through or over the guard and entering the dangerous moving parts of the machine.